

Heavy metals in rice

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The short answer

Rice is one of the most consistent sources of dietary [inorganic arsenic](#), the more toxic form of the metal, mainly because of how the crop is grown rather than because of any single grower's practices. Paddy cultivation floods the field for much of the growing season, and that flooded, low-oxygen soil chemistry mobilizes arsenic already present in soil and irrigation water into a form the rice plant takes up more readily than most other staple crops do. Regulators have treated this as established enough to act on: the EU sets maximum levels for inorganic arsenic in rice and in rice-based food for infants and young children, and the FDA has proposed an action level for inorganic arsenic in infant rice cereal specifically. Heavy metal testing measures how much of the metal, and which species of it, a specific product actually contains. A certification compares that measurement to a published limit and reports whether the product meets it. Neither step alone says whether rice as a category is something to eat; together they say whether a specific product, tested a specific way, met a specific published number.

Why rice concentrates arsenic

Most food crops grow in aerated soil, where arsenic tends to stay in forms a plant absorbs only in limited amounts. Rice is different because paddy cultivation keeps fields flooded for much of the season, and the resulting anaerobic soil chemistry converts arsenic into a more soluble, more plant-available form; rice also draws water directly through its roots for most of its growth, giving it more opportunity to take up whatever is dissolved in that standing water and the soil beneath it. The result is that rice, as a category, tends to carry more arsenic than most other grains, and a larger share of what it carries is the inorganic species, the form regulators and toxicologists treat as more toxic and that carries an established cancer classification at sufficient exposure.

A total arsenic number does not say how much of that total is inorganic, and two products with similar total arsenic can differ substantially in the inorganic share depending on rice variety, the growing region's soil and water, and how the grain is milled. Whole grain, brown rice retains the bran layer where arsenic tends to concentrate, while white rice, milled to remove that layer, generally carries less; this is a general pattern across the category, not a claim about any specific product.

Rice-based infant cereal draws particular regulatory attention because infants and young children eat it as a large share of their diet relative to their body weight, at a stage when growth is most sensitive to contaminant exposure. What determines whether an exposure is a meaningful concern is dose, the population eating the product, and how often they eat it, not the presence of arsenic on its own, which is why regulators have moved toward numeric limits for this category rather than leaving the question to interpretation.

How rice is tested for heavy metals

An accredited laboratory tests rice the way it tests any food: it digests a representative sample into solution and measures each metal by inductively coupled plasma mass spectrometry (ICP-MS), the method sensitive enough to reach the low concentrations these limits are written at. For arsenic specifically, a result that reports only total arsenic is not sufficient to check against a limit written for the inorganic species, so a rice-appropriate panel runs inorganic arsenic speciation as a separate step, isolating the inorganic fraction from the organic forms that make up the rest of the total.

Basis matters as much as method. Rice is sold as raw grain, as a milled product, as a breakfast cereal, or as an ingredient in a prepared food, and it is eaten cooked, almost always after absorbing water, which changes its weight and can change the measured concentration per gram. A result measured on the product as sold is not the same figure as a result measured after cooking, and a credible test states which basis was used. A published limit only means something when the result checked against it was measured on the same basis the limit itself was written in, alongside the laboratory's method and detection limits.

What a heavy-metal certification adds

Testing produces a number. A certification is the separate step of publishing, in advance, the exact limit that number will be measured against, then confirming an accredited laboratory's result meets it. Heavy Metal Tested & Certified publishes a numeric per-analyte limit for each rice and grain subcategory, including bulk rice and grain and rice-based breakfast cereal, before certifying anything against it, so a brand knows the figure its result has to meet before it tests. Certification runs on the full ten-analyte panel, not arsenic alone, since a rice-based product can also carry [lead](#), [cadmium](#), or other regulated metals depending on its supply chain.

The mark that comes out of this process is a statement that a specific product, tested by an accredited laboratory on a stated basis, met a stated published number. It is not a statement that the product, or rice as a category, is safe in some unqualified sense; that word only carries meaning attached to a dose, a population, and a level of exposure, and a mark does not carry that context on its own. The literature those limits are set against, and the regulatory picture summarized above, is documented in full, with sources, at the [Heavy Metal Index](#)^[2], a separate and openly compiled reference on heavy metals in food.

Where to go next

If you buy rice or a rice-based product and want to understand the evidence behind the arsenic question, the peer-reviewed literature on heavy metals in rice, including the paddy-cultivation chemistry and the regulatory history noted above, is compiled openly at the [Heavy Metal Index](#)^[2], a public, source-linked reference that does not endorse this certification. A certification is the narrower, separate claim that a specific product was measured against a specific published limit: the [standards register](#) lists the published per-analyte limits by subcategory, and the [certification comparison](#) explains how that claim differs across programs.

If you make a rice-based product and want to lower its heavy metal content, that same occurrence and source literature is compiled at the [Heavy Metal Index](#)^[2], documenting what is known about where arsenic and other metals enter the rice supply chain. Heavy Metal Tested & Certified gives you a published, per-

analyte target to test against before you test, along with a [readiness pathway](#) for moving a product from a first result to a certifiable one.

Common questions

▼ Is there arsenic in rice?

Yes. Arsenic occurs naturally in soil and water, and rice takes it up more readily than most other grains because of how it is grown. Paddy fields are flooded for much of the growing season, and that flooded soil chemistry converts arsenic into a form the rice plant absorbs more easily than crops grown in aerated soil do. Arsenic in rice is a mix of inorganic and organic forms; the inorganic fraction is the one regulators and toxicologists treat as more toxic, which is why a test that reports only total arsenic is not enough on its own.

▼ Which rice is lowest in arsenic?

As a general pattern across the category, white rice tends to carry less arsenic than brown rice, because milling removes the bran layer where arsenic concentrates; this is a pattern, not a guarantee for any specific product. Growing region and irrigation source also matter, since soil and water arsenic levels vary geographically and rice grown in different regions can differ as a result. Neither factor is something a shopper can verify without a laboratory result and a published limit to check it against.

▼ How is rice tested for heavy metals?

An accredited laboratory digests a representative rice sample into solution and measures each metal by inductively coupled plasma mass spectrometry (ICP-MS). Because the inorganic fraction of arsenic is the health-relevant one, a rice-appropriate test runs inorganic arsenic speciation as a separate step rather than reporting total arsenic alone. A credible result also states the basis it was measured in, generally the product as sold rather than after cooking, since cooking changes weight and can change the measured concentration per gram.

▼ Is there a certification for heavy metals in rice?

Yes. Heavy Metal Tested & Certified publishes a numeric per-analyte limit for rice and grain subcategories, including bulk rice and grain and rice-based breakfast cereal, before certifying any product against it, and certifies on the full ten-analyte panel rather than arsenic alone.

[See the bulk rice and grain standard →](#)

▼ Does rinsing or cooking rice remove heavy metals?

Rinsing rice and cooking it in extra water that is then drained can reduce arsenic to some degree, because part of the arsenic in raw rice sits on the surface or dissolves into the cooking water. Neither step removes all of the arsenic present, and how much is reduced varies with rice type, rinsing method, and the water-to-rice ratio used, so it is not something a household can verify without a test. It is a general cooking practice, not a substitute for a product tested and certified against a published limit.